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U. S. DEPARTMENT OF AGRICULTURE

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING
Washington, D. C.

FIELD LETTER NO. 88
November 15, 1917.

Logan Waller Page, Director.

P. St. J. Wilson, Chief Engineer.; J. E. Pennybacker, Chief of Management;
Samuel Fortier, Chief of Irrigation Investigations; S. H. McCrory, Chief of
Drainage Investigations; E. B. McCormick, Chief of Rural Engineering;
Prevost Hubbard, Chief of Tests.

FEDERAL AID
Administration

The question as to what disposition to make of the difference between the amount of the estimated cost of a project under the Federal Aid Road Act set aside in the Federal Treasury and the Government's share of the contract price where the contract is let for less than the estimated cost has been passed ^{upon} by the Solicitor. It is his opinion that such differences in amounts may be allowed by the Secretary for use on some other project after notifying the Secretary of the Treasury that the amount set aside should be used accordingly.

The Solicitor has also passed upon the question as to whether or not so-called "special supply routes" may be considered rural post roads within the meaning of the Federal Aid Road Act. Such routes are provided for in Section 1397 of the Postal Laws and Regulations, Section 3971, U. S. Revised Statutes, which reads as follows:

"The Postmaster General may enter into contracts for extending the line of posts to supply mails to post offices not on any established route, and, as a compensation for carrying the mail under such contracts, may allow not exceeding two-thirds of the salary paid to the Postmaster at such special offices."

The opinion, under date of October 30, holds that a road actually used for transporting the mails under a contract as provided for in the above section constitutes a post road within the meaning of the Federal Aid Road Act.

Federal Aid Projects.

Thirty-nine new project statements were submitted in October, as follows: Alabama Nos. 21, 22, 24, and 25; Arkansas Nos. 5, 6 and 7; Florida No. 2; Idaho No. 2; Iowa Nos. 3, 5 and 6; Louisiana Nos. 7 and 12; Nebraska No. 1; New Jersey No. 1; New Mexico Nos. 1, 2, 3 and 4; North Carolina Nos. 4, 10, 11 and 18; Oklahoma No. 2; Oregon Nos. 2, 3 and 4; Pennsylvania No. 4; South Carolina Nos. 4 and 5; Texas Nos. 1, 2, 3, and 4; Washington No. 7; and Wyoming Nos. 2, 10 and 12.

DEPARTMENT OF AGRICULTURE
BUREAU OF RURAL ENGINEERING
WASHINGTON, D. C.

FIELD LETTER NO. 35
November 15, 1917.

Director, Bureau of Rural Engineering,
Washington, D. C.
Chief of Management,
Federal Aid Highway Act,
Chief of Highway Engineering,
Federal Aid Highway Act,
Chief of Highway Engineering,
Federal Aid Highway Act.

FEDERAL AID
HIGHWAY ACT

The purpose of this letter is to advise you of the difference between the Federal Aid Highway Act and the Federal Aid Road Act. The Federal Aid Highway Act is for the purpose of providing for the construction and maintenance of highways, while the Federal Aid Road Act is for the purpose of providing for the construction and maintenance of roads. It is the opinion of the Bureau that the Federal Aid Highway Act is more comprehensive than the Federal Aid Road Act, and that it is the more desirable of the two.

The Federal Aid Highway Act is a more comprehensive act than the Federal Aid Road Act. It covers the construction and maintenance of highways, while the Federal Aid Road Act covers only the construction and maintenance of roads. The Federal Aid Highway Act also covers the construction and maintenance of bridges, while the Federal Aid Road Act does not. It is the opinion of the Bureau that the Federal Aid Highway Act is more comprehensive than the Federal Aid Road Act, and that it is the more desirable of the two.

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FEDERAL AID HIGHWAY ACT

The Federal Aid Highway Act is a more comprehensive act than the Federal Aid Road Act. It covers the construction and maintenance of highways, while the Federal Aid Road Act covers only the construction and maintenance of roads. The Federal Aid Highway Act also covers the construction and maintenance of bridges, while the Federal Aid Road Act does not. It is the opinion of the Bureau that the Federal Aid Highway Act is more comprehensive than the Federal Aid Road Act, and that it is the more desirable of the two.

The Secretary has approved Alabama Nos. 14, 21, 22, 23, 24 and 25; Arkansas Nos. 4, 5, 6 and 7; Florida No.1; Georgia Nos. 3, 4 and 6; Iowa No.6; Louisiana No.8; Massachusetts No.6; Minnesota Nos. 4 and 15; Mississippi No.1; Missouri No.3; Nebraska No.1; North Carolina Nos. 4, 8 and 10; Ohio No.1; Oregon No.3; Pennsylvania No.4; and Wyoming No.2 - a total of 29.

District Engineer Sweetser received 4 project statements from New Mexico and 2 from Nevada. He is investigating the Nevada projects.

Bids were called for on Colorado Project No.1 (Denver to Littleton Road).

J. W. Johnson, Senior Highway Engineer, made preliminary inspections of Colorado No.8; Utah Nos. 2, 3 and 4, and Wyoming Nos. 5, 7 and 12.

A. E. Palen, Highway Engineer, inspected Colorado No.7.

W. G. Harger, Senior Highway Engineer, inspected Wyoming No.2.

District Engineer Hathaway made numerous preliminary inspections in connection with Federal aid work in Wisconsin. He visited Chisago and Washington Counties, Minnesota, for the purpose of inspecting road materials and existing roads.

George C. Scales, Senior Highway Engineer, attended the opening of bids at Redwood on Minnesota No.13.

District Engineer Wonders was engaged practically the entire month in inspecting Federal aid projects and giving advice and assistance relative thereto.

George L. Campen, Senior Highway Engineer, was assigned to District 5 October 22.

District Engineer Fauntleroy advised with the State Highway Departments of Texas, Arkansas and Louisiana regarding Federal aid matters.

H. C. Wells, Highway Engineer, made field inspections of proposed Federal aid projects in southern and eastern Texas. The latter part of the month he went to Little Rock, Arkansas, to relieve Mr. H. K. Craig, Highway Engineer, who has been transferred to District 2. Mr. Wells' address is Marion Hotel, Little Rock, Arkansas.

Edward P. Shuman, Senior Highway Engineer, spent most of the month inspecting roads in central and eastern Texas on which Federal aid has been requested.

District Engineer Voshell was in the Washington Office about two days, and during the remainder of the month had several conferences with each of the Highway Departments of Indiana, Kentucky, and Illinois; inspected Illinois proposed project No.1; assisted representatives of the Highway Departments of Michigan and Illinois in preparing general specifications for Federal Aid roads; and attended a meeting of the Committee on

The Secretary has approved Alabama Nos. 1, 2, 3, 4 and 5; Arkansas Nos. 1, 2, 3, 4 and 5; Florida Nos. 1, 2, 3, 4 and 5; Georgia Nos. 1, 2, 3, 4 and 5; Iowa Nos. 1, 2, 3, 4 and 5; Kansas Nos. 1, 2, 3, 4 and 5; Louisiana Nos. 1, 2, 3, 4 and 5; Massachusetts Nos. 1, 2, 3, 4 and 5; Minnesota Nos. 1, 2, 3, 4 and 5; Mississippi Nos. 1, 2, 3, 4 and 5; Missouri Nos. 1, 2, 3, 4 and 5; Montana Nos. 1, 2, 3, 4 and 5; Nebraska Nos. 1, 2, 3, 4 and 5; Nevada Nos. 1, 2, 3, 4 and 5; New York Nos. 1, 2, 3, 4 and 5; North Carolina Nos. 1, 2, 3, 4 and 5; North Dakota Nos. 1, 2, 3, 4 and 5; Ohio Nos. 1, 2, 3, 4 and 5; Oklahoma Nos. 1, 2, 3, 4 and 5; Oregon Nos. 1, 2, 3, 4 and 5; Pennsylvania Nos. 1, 2, 3, 4 and 5; Rhode Island Nos. 1, 2, 3, 4 and 5; South Carolina Nos. 1, 2, 3, 4 and 5; South Dakota Nos. 1, 2, 3, 4 and 5; Tennessee Nos. 1, 2, 3, 4 and 5; Texas Nos. 1, 2, 3, 4 and 5; Utah Nos. 1, 2, 3, 4 and 5; Vermont Nos. 1, 2, 3, 4 and 5; Virginia Nos. 1, 2, 3, 4 and 5; Washington Nos. 1, 2, 3, 4 and 5; West Virginia Nos. 1, 2, 3, 4 and 5; Wisconsin Nos. 1, 2, 3, 4 and 5; Wyoming Nos. 1, 2, 3, 4 and 5.

District Engineer has received a project statement from New York and is investigating the Nevada projects.

Bids were called for on Colorado Project No. 1 (Denver to Littleton).

J. W. Johnson, Senior Highway Engineer, made preliminary inspections of Colorado Nos. 1, 2, 3 and 4, and Wyoming Nos. 1, 2 and 3.

A. E. Patten, Highway Engineer, inspected Colorado No. 5.

E. C. Hargen, Senior Highway Engineer, inspected Wyoming No. 2.

District Engineer Highway made numerous preliminary inspections in connection with Federal aid work in Wisconsin. He visited Wisconsin and Washington Counties, Minnesota, for the purpose of inspecting road materials and existing roads.

George C. Seaton, Senior Highway Engineer, attended the opening of bids at Redwood on October 12.

District Engineer Highway was engaged practically the entire month in inspecting Federal aid projects and giving advice and assistance relative thereto.

George L. Campbell, Senior Highway Engineer, was assigned to District October 23.

District Engineer Highway advised with the State Highway Department of Texas, Arkansas and Louisiana regarding Federal aid matters.

E. C. Wells, Highway Engineer, made field inspections of projects in the State of Texas. The latter part of the month he was in Little Rock, Arkansas, to relieve Mr. H. W. Wells, who has been transferred to District 2, Little Rock, Arkansas.

Frank J. Shuman, Senior Highway Engineer, spent most of the month in the central and eastern Texas on which Federal aid has been granted.

District Engineer Highway was in the Washington Office for two weeks. The remainder of the month he had several conferences with the Highway Department of Indiana, Kentucky, and Illinois in connection with proposed project No. 1 in Indiana and Kentucky. He also spent some time in Michigan and Indiana in preparing plans for Federal aid roads; and

Concrete Roads and Pavements of the American Concrete Institute at New York City.

District Engineer Bullen inspected proposed projects in Tennessee, conferred with State Highway Commissioner Cocke of Florida, and spent considerable time reviewing project statements, plans, etc., for Alabama, Georgia, and Florida projects.

George C. See, Senior Highway Engineer, inspected Georgia Project No. 6 and South Carolina Projects Nos. 4 and 5.

District Engineer Miller transmitted to the Chief Engineer New Jersey No. 1

District Engineer Bishop transmitted 5 project statements, 4 from North Carolina and 1 from Pennsylvania.

While State Highway Departments are now provided for in one way or another in all of the states, some are still struggling with first steps of organization, as illustrated by the following excerpt from a letter to Mr. Hathaway written by one of our Senior Highway Engineers at the temporary headquarters of one of the departments: "The active highway organization now consists of Mr. _____ and one assistant".

Inspections and Conferences

District Engineer Hewes inspected a number of Federal Aid post road projects in Idaho, and toward the latter part of the month went to Alaska for a 10 days' trip.

National Forests Roads

J. T. Schuyler, Senior Highway Engineer, examined the Carson-Guler National Forest project in Washington and was assigned to the location survey of the Anna Creek road, in southern Oregon.

B. F. Beezley, S.R.C., was engaged in examining a section of the Olympic Highway, Washington.

J. W. Ball, J.H.E., completed the field work on the Flora-Enterprise location survey.

Continued progress was made on the Salmon River and Laguna roads.

T. C. Peterson, J.H.E., reports that he expects to complete field work on the Wind River 71-mile project in Wyoming soon. Heavy snows are delaying the Buffalo-Tensleep surveys in Park County, Wyoming.

L. E. Smith, S.R.C., has started maintenance work on the Wind Cave section of the Deadwood-Hot Springs road, South Dakota.

Corrupt Roads and Payment of the American Corrupt Institute at New York City.

District Engineer Hester inspected proposed projects in Tennessee, conferred with State Highway Commissioner of Florida, and spent considerable time reviewing project statements, plans, etc., for Alabama, Georgia, and Florida projects.

George C. Neal, District Highway Engineer, inspected Georgia Project No. 5 and South Carolina Projects Nos. 4 and 5.

District Engineer Hester transmitted to the Chief Engineer New Jersey No. 1.

District Engineer Hester transmitted 2 project statements, 1 from South Carolina and 1 from Pennsylvania.

While State Highway Departments are now provided for in one way or another in all of the states, some are still struggling with first steps of organization, as illustrated by the following excerpt from a letter to Mr. Hester written by one of our Senior Highway Engineers at the temporary headquarters of one of the departments: "The active highway organization now consists of Mr. _____ and one assistant".

Inspections and Conferences

District Engineer Hester inspected a number of Federal Aid road projects in Idaho, and toward the latter part of the month went to Alaska for a 10 days' trip.

National Forest Roads

L. T. Schwyler, District Highway Engineer, examined the Carson-Gardner National Forest project in Washington and was assigned to the location survey of the same road in southern Oregon.

L. T. Schwyler, D.H.E., was engaged in examining a section of the Carson-Gardner project, Washington.

L. T. Schwyler, D.H.E., completed the field work on the Carson-Gardner project.

Progress was made on the Salmon River and Jackson roads.

L. T. Schwyler, D.H.E., reports that he expects to complete field work on the Carson-Gardner project in Wyoming soon. Heavy snows are delaying the work on the Carson-Gardner project in Park County, Wyoming.

L. T. Schwyler, D.H.E., has started maintenance work on the Wind River road, Hot Springs road, South Dakota.

It was reported that construction of the Alpine Road, Colorado, in charge of C. F. Capes, S.R.C., would be completed in November.

Field work on the reconnaissance survey of the Swan River Project, Montana, was completed by Mr. C.W. Cheatham, S.R.C., and that on the Skalkaho by Mr. H. A. Calkins, S.R.C.

A. V. Williamson, S.R.C., is in charge of the Kooskia-Lowell reconnaissance survey, and E.E. Kidder, S.H.E., of the Ketchikan-Clayton, both projects in Idaho.

Mineral County, Montana, has signed the cooperative agreement for construction of the Alberton project which calls for \$60,000.00 to construct about 4 miles of road.

The plans and estimate of cost of improving the Russellville-Pleasant Hill Road in the Ozark National Forest, Arkansas, which were returned to District Engineer Fauntleroy for certain alterations, have been received by the Chief Engineer.

A. L. Smith, temporary chief of survey party, began reconnaissance survey of the Crestview-Camp Walton Project in the Florida National Forest. This survey is 30-odd miles long and Mr. Smith probably will be engaged on this work until the first of December.

Construction & Maintenance

E. S. Alderman, H.E., in charge of the road work at Fort Sam Houston, Texas, W. F. Brooks, S.H.E., located at the cantonment near Louisville, E. S. Finch, S.H.E., at Battle Creek, Michigan, U.S. Marshall, S.H.E., from Camp Lewis, American Lake, Washington, and R. F. Eastham, S.H.E., from Camp Upton were present at the conference called at the War Department October 12 to take up the matter of road work.

H. S. Fairbank, S.H.E., who was in charge of road work at Camp Meade, Admiral, Maryland, finished his assignment there, returned to this Office, and now is working in the Testing Division.

On October 18, District Engineer Wonders visited the Dubuque County Iowa Post Road and went over the same with H. S. Parry, J.H.E., in charge of that project.

ECONOMICS

Highway Survey

In connection with the economic highway surveys now being made, M. O. Eldridge was in Hartford, Providence, and Boston and consulted with the highway officials regarding surveys to be made in the States of Connecticut, Rhode Island, and Massachusetts. This work has been completed in New Jersey, and W. E. Rosengarten and W. H. Barton are now engaged on the field survey work in Connecticut. The State Highway Department is cooperating. Arrangements were completed for making an economic survey in Rhode Island, beginning this month if weather permits.

Maintenance Studies

J. L. Harrison, who is rushing field studies of maintenance systems and methods, was in Iowa during the first part of the month. These studies now are being taken up in the southern states.

Exhibits

The following exhibits were made of road models:

New York Electrical Exposition, Grand Central Palace, New York City, October 10-20.

International Wheat Show, Wichita, Kansas, October 1-13.

Publications

Farmers' Bulletin No. 864 "Practical Information for Beginners in Irrigation".

Farmers' Bulletin No. 828, "Farm Reservoirs".

Farmers' Bulletin No. 863, "Irrigation of Grain".

Department Bulletin No. 532, "Expansion and Contraction of Concrete".

Office of the Secretary - Circular No. 77, "Experimental Roads in the vicinity of Washington".

TESTS AND RESEARCH

Administration

Mr. Goldbeck attended meetings, October 25 to 27, of Committee C-1 on Portland Cement and Committee C-9 on Concrete Aggregates, of the American Society for Testing Materials, at Allentown, Penna.

Routine Tests and Analyses

In October 29, samples of bituminous material were examined in the Chemical Laboratory; 68 samples of rock, sand, gravel, etc. were examined in the Physical Laboratory; and 37 samples were examined and classified in the Microscopic Laboratory.

Research upon the Properties of Dust Preventives and Road Binders

Research work in the Chemical laboratory was practically discontinued during the month in order to complete tests on the accumulation of routine samples, particularly those submitted by manufactures in connection with the typical specifications prepared by the Office. The comments of manufacturers together with the results obtained upon the samples which they have submitted have been tabulated and it is expected that the specifications will be revised and submitted in the form of a bulletin.

Maintenance of Exhibits

J. L. Harrison, who is in charge of the maintenance of exhibits, was in Iowa during the first part of the month. These exhibits are being taken up in the southern states.

Exhibits

The following exhibits were made of road models:

1. Model of the Union Exposition, Grand Central Station, New York City, October 1-18.

2. Model of Wheat Show, Wichita, Kansas, October 1-18.

Publications

1. Bulletin No. 864 "Practical Information for Engineers in

2. Bulletin No. 865, "Farm Machinery".

3. Bulletin No. 866, "Irrigation of Grain".

4. Department Bulletin No. 867, "Expansion and Contraction of Concrete".

5. Office of the Secretary - Circular No. 77, "Experimental Roads in the vicinity of Washington".

TESTS AND RESEARCH

Administration

Mr. Goldbeck attended meetings, October 25 to 27, of Committee C-1 on Portland Cement and Committee C-2 on Concrete Aggregates, of the American Society for Testing Materials, at Allentown, Penna.

Positive Tests and Analysis

In October 28, samples of bituminous material were examined in the Chemical Laboratory; 66 samples of rock, sand, gravel, etc. were examined in the Physical Laboratory, and 37 samples were examined and classified in the Microscopic Laboratory.

Research upon the Properties of Best Gravels and Road Bindings

Research work in the Chemical Laboratory was practically discontinued during the month in order to complete tests on the normalization of testings. Particularly those submitted by manufacturers in connection with the typical specifications prepared by the Office. The work was resumed together with the results obtained upon the samples which had been examined and submitted in the form of a bulletin.

Investigations of the thickness of bituminous films upon various types of mineral aggregate were continued and the results will be worked up in the preparation of a paper upon the subject.

Experimental Bituminous Construction

Messrs. Hubbard and Reeve inspected the corrugated metal culverts on the Mount Vernon Avenue Experimental road which were put in place in the spring of 1915. These culverts were made from four different types of ungalvanized metal. When inspected it was noted that some more or less scaly rust formation had appeared on all of the pipe. There was, however, comparatively little difference between the copper bearing iron, copper bearing steel, and ingot iron. The open hearth steel appeared to have been most seriously attacked with a formation of heavy scaly rust.

Non-bituminous Road Material Investigations

Dr. Ladd and Mr. Jackson accompanied members of the Association of Granite Paving Block Manufacturers of the United States on an inspection trip of the granite quarries of the southern members of the Association for the purpose of obtaining data regarding the methods of quarrying rock for block manufacture, and also methods of manufacture. Quarries at Mount Airy, Stone Mountain, and Salisbury, North Carolina, as well as points near Atlanta, Georgia, were visited.

Dr. Ladd made an inspection trip in the vicinity of Boston to obtain data upon the installation and operation of portable crushing and screening plants and plants used in the operation of intermittently worked quarries. The data secured will be used, in the preparation of a bulletin.

An investigation of a standard rattler test for paving brick has been undertaken with a view to possible modification of the test. From data already secured it appears that the standard charge of spherical shot as commonly used produce less loss by abrasion than when the brick are tested without the charge.

Concrete Investigations

Work has been resumed on the testing of large reinforced slabs under concentrated loads. It is planned to apply loads through earth fills on top of the slab. The stress distribution through the steel, as well as the distribution of pressure through the earth fills, then will be studied.

Soil Pressure Investigations

Investigations of the distribution of pressure through fills is being continued and data is being accumulated on the distribution of vertical pressure.

The standpipe erected at Arlington Farm to determine hydraulic fill pressure has been increased in height and plans have been made to continue the investigation throughout the winter. The preliminary report on this work will be prepared soon.

Investigations of the thickness of bituminous films upon various types of mineral aggregate were continued and the results will be worked up in the preparation of a paper upon the subject.

Experimental Bituminous Coarsening

Hubbard and Beave investigated the coarsened metal surfaces on the various experimental road which were put in place in the spring of 1914. These experiments were made from four different types of material. It was noted that some more or less easily coarsened than others. There was, however, some variation in all of the types. The coarser bearing from, coarser bearing from, when heated steel, appeared to have been most seriously affected by the action of heavy easily rust.

Investigations of Bituminous Coarsening

Dr. Jadd and Mr. Jackson conducted members of the Association of Granite Paving Block Manufacturers of the United States on an inspection trip of the granite quarries of the southern members of the Association for the purpose of obtaining data regarding the methods of quarrying rock for block manufacture, and also methods of manufacture. Quarries of Mount Airy, Stone Mountain, and Salisbury, North Carolina, as well as points near Atlanta, Georgia, were visited.

Dr. Jadd made an inspection trip in the vicinity of Boston to obtain data upon the installation and operation of portable crushing and screening plants and plants used in the operation of intensively worked quarries. The data secured will be used in the preparation of a bulletin.

An investigation of a standard roller test for paving brick has been undertaken with a view to possible modification of the test. From data already secured it appears that the standard charge of spherical shot as commonly used produce loss by abrasion than when the brick are tested without the charge.

Investigations of Bituminous Coarsening

Work has been resumed on the study of large reinforced slabs under concentrated loads. It is now being studied through earth fills on top of the slabs. The distribution of stress through the steel, as well as the distribution of stress through the earth fills, then will be studied.

Pressure Investigations

The distribution of pressure through fills is being studied. The distribution of pressure accumulated on the distribution of vertical

The standard spread at Arlington Farm to determine hydraulic fill has been increased in height and plans have been made to continue the investigation throughout the winter. The preliminary report on this work will be given in the near future.

DRAINAGE INVESTIGATIONS

Administration

En route to the Washington Office from his trip to British Columbia and the western states, S.H. McCrory visited the survey being made by D. G. Miller, S.D.E., for Ottawa Lake Outlet Drain in Monroe County, Michigan, and at Saginaw conferred with the drainage commissioners on the plans recently prepared by this Office for reclaiming the lands along Saginaw River and tributaries.

H. S. Yohe has resigned to accept private employment.

Word has been received that Maj. W. B. Gregory has reached Paris. First Lieut. D.S. Helmick writes from France that he arrived safely, and is very busy and that his work is most interesting.

Construction, Operation and Maintenance

Report Received:

Condition of Ditches in Tusculum River Drainage District in Prentiss and Alcorn Counties, Mississippi, by G. A. Hart.

Contracts let:

Contracts let in August, in Sac, Buena Vista, Pocahontas and Calhoun Counties, Iowa.

Length	: Excavation	: Bottom Width	: Maximum Cut	: Award
feet	cu.yd.	feet	feet	per cu.yd.
52,745	: 564,265	: 36 to 34	:	: 8.57
	: 1,513,000	: 50 " 64	:	: 7.99
	: 1,797,000	: 78 " 90	:	: 9.65
78,800	: 644,397	: 8 " 14	:	: 7.90
54,500	: 827,760	: 20 " 24	:	: 8.00
3,400	: 7,370	: 6	: 14.	: 9.65
1,000	: 8,000	: 8	: 9.7	: 9.65
8,900	: 66,400	: 8	: 19.	: 9.65
20,200	: 49,190	: 8	: 13.7	: 9.65
250	: 660	: 6	: 6.	: 9.65
23,000	: 98,766	: 14 - 16	: 18.7	: 9.65
Clean out old ditch	: 7,297	: 3	: 13.	: 9.65
26,700	: 190,575	: 8 - 10	: 17.	: 9.65
	: 27,000	: 12	: 7.8	: 9.65

[illegible]

Tile prices have been quoted recently, f.o.b./ factory, as follows:

Clay Tile

Factory at	3-in.	4-in.	5-in.	6-in.	8-in.	10-in.	12-in.
Pomona, N.C.	\$17.50	\$22.50	\$33.00	\$44.00	\$55.00	-	-
Chattanooga, Tenn.	20.00	25.00	32.50	40.00	60.00	\$130.00	\$200.00
Statesville, N.C.	-	20.00	-	35.00	-	-	-
Summerville, S.C.	20.00	35.00	33.00	42.00	60.00	75.00	-

Cement Tile

Thomasville, N.C.	29.00	28.50	38.50	48.50	60.00	150.00	225.00
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One manufacturer quoted on clay specials:

3" and 4" branches	20¢
5" and 6"	" 25
8"	" 25
10"	" 60
12"	" 75

The cement tile maker quoted:

6" and 8" branches 30¢ less than 5" branches 25¢

Recently clay tile from Chattanooga was quoted f.o.b. McKinney, Kentucky, for 60 days delivery:

3" tile at	\$20.00	per M
4" " "	27.50	" "
5" " "	35.00	" "
6" " "	45.00	" "

For this job, hauling 8 miles was to cost 10¢ per 100#, when the maximum 2-horse load was 500 feet of 4" tile.

Late in October, prices on clay tile were quoted f.o.b. factory:

	4-in.	5-in.	6-in.	8-in.	10-in.	12-in.	14-in.
Texarkana	\$30.00	\$37.50	\$50.00	\$80.00	\$100.00	\$140.00	-
Commerce, Mo?	22.50	30.50	38.50	68.75	110.00	198.50	\$198.00
	15-in.	18-in.	20-in.	21-in.	22-in.	24-in.	
Texarkana	\$250.00	\$400.00	-	\$560.00	-	\$720.00	
Commerce, Mo?	231.00	380.00	\$396.00	-	\$467.00	550.00	

*Prices at Commerce, Mo., are computed from previous quotations, plus 10 per cent increase as per manufacturer's notice.

These prices at Texarkana are said to be about 35 per cent above those of some time ago.

These prices have been quoted for the following:

Clay Pipe

Factory at : 3-in. : 4-in. : 5-in. : 6-in. : 8-in. : 10-in. : 12-in.

Chattanooga, Tenn.	30.00	32.00	35.00	40.00	45.00	50.00	55.00
Stettinville, N.C.	30.00	32.00	35.00	40.00	45.00	50.00	55.00
Summersville, W.V.	30.00	32.00	35.00	40.00	45.00	50.00	55.00

General Pipe

Chattanooga, Tenn.	30.00	32.00	35.00	40.00	45.00	50.00	55.00
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Our manufacturer quoted on clay specials:

3" and 4" branches	20¢
5" and 6"	25
7"	30
8"	35
9"	40
10"	45

For this pipe, the following prices were quoted for 100 ft. per lot:

Maximum 2-horse lot of 200 feet of 4" pipe.

4-in.	30.00
5-in.	32.00
6-in.	35.00
8-in.	40.00

For this pipe, the following prices were quoted for 100 ft. per lot:

Maximum 2-horse lot of 200 feet of 4" pipe.

Chattanooga, Tenn.	30.00	32.00	35.00	40.00	45.00	50.00	55.00
Stettinville, N.C.	30.00	32.00	35.00	40.00	45.00	50.00	55.00
Summersville, W.V.	30.00	32.00	35.00	40.00	45.00	50.00	55.00

Chattanooga, Tenn.	30.00	32.00	35.00	40.00	45.00	50.00	55.00
Stettinville, N.C.	30.00	32.00	35.00	40.00	45.00	50.00	55.00
Summersville, W.V.	30.00	32.00	35.00	40.00	45.00	50.00	55.00

*Prices at Commerce, Mo., are computed from previous quotations, plus 10 per cent increase as per manufacturer's notice.

These prices at Texarkana are said to be about 25 per cent above

those of some time ago.

As compared with prices in 1917, the following list gives prices f.o.b. factory in 1916:

Clay Tile - prices f.o.b. factory 1916

	3-in.	4-in.	5-in.	6-in.	8-in.	10-in.
Pomona, Terra Cotta Co:						
Pomona, N.C.....:	\$14.00	\$18.00	\$27.00	\$35.00	\$55.00	-
Chattanooga Sewer :	-	-	-	-	-	-
Pipe Works.....:	11.00	16.00	20.00	26.00	-	-
Chattanooga, Tenn.....:						
Stubsville Brick Co.						
Stubsville, N.C.:	-	17.50	-	30.00	-	-

Cement Tile

Gray Concrete Co.....:						
Thomasville, N.C.....:	14.50	20.00	27.50	40.00	55.00	70.00

Run-off Investigations

Report Received:

Run-off Investigations in Four Hole Swamp, S.C., by F.G.Eason.

Farm Drainage

The field experiments on flow in drain tile at Arlington Farm, including some experiments with corrugated metal culverts and upon loss of head at catch basins, have been completed for the season.

Since the last Field Letter, 20 farm drainage reports have been received from the field engineers, and 23 have been transmitted to the interested landowners.

H. M. Lynde installed a drainage exhibit at the North Carolina State Fair, October 15-20, at Raleigh.

Overflowed Lands

Reports Transmitted:

Goose Creek District, Beaufort Co., N.C.(prel.) by H.M.Lynde
 Fork Creek District, Madison Co., Ga. (prel.) " J.V.Phillips
 Fishing Creek District, Oglethorpe & Green Cos. Ga.(prel.) by J.V.Phillips
 Little River District, Walton, Newton and Morgan Cos. Ga.(prel.) do
 Rocky Fork District, Hancock Co., Ga. (prel.) by J.V.Phillips.
 Birch Creek District, Pike Co., Ga. (prel.) " do
 Little Mulberry River District, Gwinnett Co., Ga.(prel.) by J.V.Phillips
 Powder Springs Creek District, Paulding and Cobb Cos., Ga. (prel.) by "

Reports Received:

Levee District for G.W.Hollinshead, Jr., Baldwin Co., Ga., by J.V.Phillips.
Point Drainage District, Henderson Co., Ky. (prel.) by E.C.Thomes

Swamp Lands

Reports Transmitted:

Georgetown Farm Land & Homeseekers Co., S.C. (supplemental) by F.G.Eason.
Proposed Elma Township Drainage District, Richland Co., N.D., by D.G.Miller.

H. M. Lynde made an investigation of the effect of recent exceptionally heavy rains in Beaufort, Hyde and Washington Counties, North Carolina, and of the adequacy of some of the drainage ditches in operation there.

Irrigation in Humid Regions

F. W. Stanley made investigations of farm irrigation systems, and of locations where it has been proposed to install such systems, near Orlando, Fort Pierce, Kissimmee, Clearwater and Bradentown, Fla. In part of the investigations he was accompanied by F.E.Staebner.

IRRIGATION INVESTIGATIONS

Administration

R. B. Sleight, A.I.E., has been granted indefinite leave of absence to accept a position in the Signal Corps of the Army, in anticipation of receiving a commission as First Lieutenant.

An examination will be offered by the Civil Service Commission within a few weeks to establish a new register of Junior Irrigation Engineer, eligible for appointment at salaries ranging from \$1000 to \$1500 per annum. Field employees of the division are asked to forward names of men not more than 35 years old who would care to take the examination and whom they would recommend for appointment should they be certified by the Commission.

Use of Water:

Field work on the Poudre Valley surveys in Colorado was practically finished, and employees on this work reported to the Ft. Collins laboratory.

P. E. Fuller, I.E., has submitted a report on Uniform Distribution of Irrigation Water, based on his work in Arizona. The paper contains two main propositions - the extent of vertical and horizontal penetration of moisture depends principally upon the duration of time which water is in contact with a particular type of soil - and the advance of irrigation water across a well-leveled and uniform field indicates the uniformity with which moisture is distributed throughout the field.

Police Drainage District, Henderson Co., Ky. (priv.) by Geo. Thomas

...and ...
...of ...
...by ...

STANDARD FORM OF NOTARIAL

ИЗВЕЩАНИЕ ПО ТАРИФАМ

R. B. Sleight, A.I.E., has been granted indefinite leave of absence to accept a position in the Signal Corps of the Army, in anticipation of receiving a commission as Third Lieutenant.

1967 10 24

Dr. E. Toller, I.R., has submitted a report on Irrigation Distribution in Arizona. The paper contains the following information: The extent of vertical and horizontal penetration of water into the soil depends principally upon the duration of time which water is in contact with a particular type of soil - and the advance of irrigation is well-leveled and uniform field indicates the uniformity of moisture is distributed throughout the field.

H. C. Diesem, I.E., reports the completion of a report on Methods of Subirrigation Practiced in the Great Plains section.

Appliances and Equipment

A number of current meter tests were conducted at Fort Collins laboratory after the close of the Poudre Valley surveys, but were cut short by freezing weather. Tests were also run on some recording devices submitted by a manufacturing firm, to determine the fitness of the instruments for work on which water registers and other devices have been used heretofore.

Dr. E. W. Schoder of Cornell University who was appointed Agent to continue experiments at Cornell hydraulic laboratory with Venturi flumes of large dimensions, has been commissioned Captain in the army, and visited the Washington Office for a conference with Dr. Fortier regarding the future of the experiments before taking up his new duties. The experiments will be continued under the direction of Prof. K. B. Turner, Dr. Schoder's collaborator.

Flow of Water

Manuscript of a bulletin on Flow of Water in Concrete Pipes has been turned in by F.C. Scobey, S.I.E., to form the third of the series on Flow of Water. Mr. Scobey has left Washington for Berkeley, California, which has been made his official station.

Customs, Regulations and Laws

R. P. Teele, I.E., spent the larger part of the month in a field study of the operation of local laws covering the adjudication of rights to water for irrigation. He conferred with the state engineer of Oregon and his assistants and the superintendents of irrigation, and visited different parts of the state where water right adjudications had been made, visited the office of the state hydraulic engineers of Washington, conferred with the comptroller of water rights, the board of investigation and district engineers of British Columbia, visited irrigation sections of the same province, and conferred with irrigation officials of the Province of Alberta and of the Dominion of Canada at Calgary.

Frank Adams, I.M. made a trip to Oregon in October to confer with the state engineer and his assistants regarding the state irrigation district law and to make a field study of the operation of that law. Several districts are in process of formation, and these were visited.

Drainage of Irrigated Lands

So many owners of tracts of land near Syracuse, Utah, have asked the Office for assistance in devising farm drainage systems that some form of organization has been advised by R. A. Hart, S.D.E. A drainage district seems to be out of the question at the present time, and at a recent conference with the landowners a plan of incorporation as a reclamation company was proposed. The matter is now in the hands of a committee to work out the details of the scheme.

RURAL ENGINEERING

Domestic Water Supply and Sewage Disposal

Routine correspondence was handled during the month including the following subjects:

Control of water in tanks and troughs from a higher situated reservoir, maintenance of the purity of water supplies, wells, and sewage disposal.

C. S. Haynes was married on October 6, to Miss Nina Devall of Farmville, Virginia.

Farm Structures

M. C. Betts visited New York to inspect some buildings in connection with the design of the proposed Office of Public Roads and Rural Engineering building at Arlington.

Bills of materials for four Irish potato storage houses have been completed and are now available for distribution with the prints of the drawings of the houses.

About 800 sets of prints with the printed bills of materials of the four sizes of sweet potato storage houses have been mailed to the county agents of the south, in order to promote the conservation of the sweet potato crop.

Working drawings are being prepared for a greenhouse to be erected on the Arlington Farm for use of Cereal Investigations. The building is to be of reinforced concrete and frame construction.

The remodeling of the Cereal Investigations Laboratory is progressing, additions to the building have been contracted for and construction started. The Division of Rural Engineering is supervising this work, as well as the installation of a ten-ton traveling crane in the remodeled portion of the building.

Mechanical Problems

The chart of tractor specifications which was mentioned in last month's letter has been completed and several blueprints made for Office use. Specifications are given for 153 individual tractors manufactured by 104 firms.

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These were compiled in connection with the work on tractors.

Data relating to the prices on farm machinery, materials supply, and transportation and distribution of finished products throughout different parts of the country, have been secured and prepared for the Office of the Secretary.

Assistance has been rendered in the field test of the Experimental Air Spraying Outfit designed and constructed for the Bureau of Plant Industry by this Office. While the operation of the power plant was entirely satisfactory, it has been decided to attempt to so reduce the weight of the outfit that one man can operate it. Several trips have been made to a farm near Vienna, Virginia, securing data and investigating the possibility of developing a farm hydroelectric plant.

Consultations and correspondence relating to the following subjects were handled:

Ice House Design and Construction,	Water Supply and Pumping,
Farm Electric Plants,	History of Wagons,
Power Development of Streams,	Stump Pullers,
Bean and Pea Threshers,	Agricultural Machinery,
Rotary tillers,	Tractors and Gas Engines,
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